

Customer No.: 31561  
Application No.: 10/707,084  
Docket No.: 10722-US-PA

### REMARKS

#### Present Status of the Application

In the Office Action, the drawings have been objected to because the Examiner cannot ascertain where the "first protrusion portion" and the "second protrusion portion" are located in the figures.

As regards the prior art rejections, claims 1-5 and 10 stand rejected under 35 U.S.C. §102(e) as being anticipated by Yanamoto (U.S. Publication No. 2003/0047744; "Yanamoto" hereinafter). Claims 7-9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Yanamoto as applied to claim 1 above, further in view of D' Evelyn et al. (U.S. Publication No. 2004/0124435; "D' Evelyn '435" hereinafter). Claims 11, 14-17, 19 and 21 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Yanamoto in view of D' Evelyn '435 further in view of D' Evelyn et al. (U.S. Publication No. 2002/0155634; "D' Evelyn '634" hereinafter).

In response hereto, Applicants respectfully submit replacement sheets of the drawings to rectify the insufficiencies of the figures. Further, Applicants have amended claims 1 and 11 in consideration of non-introduction of any new matter. It is submitted that the amended claims patentably define over the prior art references, taken alone or in combination, and thus should be allowed. The entry of the proposed amendments and reconsideration of the present application are courteously solicited.

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**Response to Claim Rejections under 35 U.S.C. §102**

*Responsive to the rejections of claims 1-5 and 10 under 35 U.S.C. §102(e) as being anticipated by Yanamoto, Applicants have amended claim 1 and hereby traverse the rejections thereof for at least the reasons indicated hereinafter.*

With respect to claim 1 of the present invention at issue, as currently amended, it recites in part,

“An UV photodetector, comprising:

(...)

a high-resistivity GaN-based interlayer for reducing leakage current, disposed on the first protrusion portion of the GaN-based semiconductor layer, and a material of the GaN-based interlayer comprising  $\text{Al}_x\text{In}_y\text{Ga}_{1-x-y}\text{N}$ , wherein  $x \geq 0$ ,  $y \geq 0$ ,  $1 \geq x + y$ ;

a first electrode, disposed on the GaN-based interlayer; and

a second electrode disposed on a portion of the GaN-based semiconductor layer except for the first protrusion portion.” (Emphasis added)

The Examiner has alleged in the outstanding Office Action that the current strangulation layer 204 provided by Yanamoto has disclosed the high-resistivity GaN-based

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interlayer of the present invention. Applicants respectfully disagree, for Yanamoto, the single prior art reference, fails to teach each and every feature of Applicants' claim 1 at issue.

The high-resistivity GaN-based interlayer of the present invention, as purportedly read on by the current strangulation layer of Yanamoto, aims at **reducing the leakage current of the UV photodetector**. The above statement is apparently supported by the descriptions in paragraphs [0022] and [0041] of the instant application and is contained in the above-referenced claim 1. However, in page 5, paragraph [0047] of Yanamoto, it is explicitly taught that the current strangulation layer is used to **"further confine the light in the waveguide region"**. After carefully scrutinizing the disclosure of Yanamoto, Applicants respectfully submit that the current strangulation layer 204 of Yanamoto is not equipped with the function of reducing the leakage current, which is further evidenced by the fact that the LED disclosed by Yanamoto does not even encounter the issue concerning current leakage. In light of the foregoing, it is held that Yanamoto does not contain all the claimed features of the claim at issue, rendering Applicants' claim 1 novel and patentable.

On the other hand, the active layer of the LED, as claimed in Yanamoto, does not function in the same manner as the active layer of the photo diode does. Therefore, one skilled artisan would not interpret that the active layer (light-emitting layer) of the LED serves as the active layer (light-sensing layer) of the photo diode. Specifically, after receiving the current and transforming an electrical energy to a light energy, the active layer of the LED is able to emit light beams. By contrast, the active layer of the photo diode proposed by the present invention transforming the light energy to the electrical energy after

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being irradiated by the light beams, so as to generate photo current.

In light of the foregoing, Yanamoto fails to teach each and every element in claim 1 of the present invention. Applicants respectfully submit that independent claim 1 is distinctive from the prior art reference, and thus should be allowed. For at least the same reasons, dependent claims 2-5 and 10 also patently define over the single prior art reference as a matter of law, for at least the reason that these dependent claims contain all features of their respective independent claim 1.

**Response to Claim Rejections under 35 U.S.C. §103**

*Applicants courteously traverse both the rejections of claims 7-9 under 35 U.S.C. §103(a) as being unpatentable over Yanamoto as applied to claim 1 above, further in view of D' Evelyn '435 and the rejections of claims 11, 14-17, 19 and 21 under 35 U.S.C. §103(a) as being unpatentable over Yanamoto in view of D' Evelyn '435 further in view of D' Evelyn '634 because a prima facie case of obviousness has not been established by the Office Action.*

To establish a *prima facie* case of obviousness under 35 U.S.C. 103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art, to combine the references in a manner resulting

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in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must "be found in the prior art, and not be based on applicant's disclosure." See M.P.E.P. 2143, 8<sup>th</sup> ed., February 2003.

Applicants submit that, as disclosed above, Yanamoto fails to teach or suggest each and every element of claim 1, from which claims 7-9 depend, for the combination of the secondary references cannot cure the deficiencies of Yanamoto. Yanamoto, taken alone or in combination with the secondary references, fails to teach or suggest "a high-resistivity GaN-based interlayer for reducing leakage current". Accordingly, Applicants' independent claim 1 is patentable over Yanamoto and the secondary references of record. For at the least the same reasons, its dependent claims 7-9 are also patentable as a matter of law.

Furthermore, the proposed amendment to claim 1 has also been incorporated into independent claim 11 of the present invention. At least for the reasons advanced above, Applicants' claim 11 and claims 14-17, 19, and 21 depending thereupon, are non-obvious over the prior art references, and should be allowable.

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**CONCLUSION**

For at least the foregoing reasons, it is believed that all pending claims 1-5, 7-11, 14-17, 19 and 21 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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